



Course and Examination Fact Sheet: Autumn Semester 2017

7,320: Quantitative Risk Management

ECTS credits: 4

Overview examination/s

(binding regulations see below)

Decentral - Oral examination (individual) (75%, 15 mins.)

Decentral - Group examination paper (all given the same grades) (25%)

Attached courses

Timetable -- Language -- Lecturer

[7,320,1.00 Quantitative Risk Management](#) -- Englisch -- [De Giorgi Enrico](#)

Course information

Course prerequisites

Knowledge of a statistical software like MatLab or R is required for the group assignment.

Course content

The global financial crises that erupted in 2008 has intensified the interest in risk management among financial institutions. It is now generally recognized that poor risk management has been one of the causes of the current financial crises. In particular, credit risk and operational risk, the first being the risk that a counterparty in a financial contract might fail to fulfill its contractual obligations, the second being the risk of losses due to management failures or inadequate systems, are not well understood.

This course focuses on quantitative models for assessing credit and operational risk. We first introduce the notations of risk factors and risk measures. We then discuss the two main approaches for modeling credit risk. Finally, we study extreme value theory, that deals with extreme events (as big losses due to management failures), and apply it to assess operational risk.

Introduction

- Need for Risk Management
- Risk Factors
- Risk Measures: From Value-at-Risk to Convex Risk Measures

Credit Risk

- Structural Credit Models: Merton Model and Extensions
- Reduced Form Credit Model
- An Application: Retail Credit Risk Modeling

Operational Risk

- Introduction



- Extreme Value Theory (ETV)
- Application of EVT to Operational Risk Valuation

Course structure

- There will be a group assignment (max 3 students/group).
- The oral exam will take place during the last week of the term.

Course literature

1. (*) De Giorgi, Enrico (2017): Quantitative Risk Management, Lecture Notes, HSG.
2. Embrechts, Paul, Rüdiger Frey, and Alexander McNeil (2005): Quantitative Risk Management: Concepts, Techniques and Tools, Princeton University Press.

Additional course information

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Examination information

Examination sub part/s

1. Examination sub part (1/2)

Examination time and form

Decentral - Oral examination (individual) (75%, 15 mins.)

Remark

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Examination-aid rule

Extended Closed Book

The use of aids is limited; any additional aids permitted are exhaustively listed under "Supplementary aids". Basically, the following is applicable:

- At such examinations, all the pocket calculators of the Texas Instruments TI-30 series and mono- or bilingual dictionaries (no subject-specific dictionaries) without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are inadmissible.



- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as notebooks, tablets, PDAs, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

Supplementary aids

No additional aids.

Examination languages

Question language: English

Answer language: English

2. Examination sub part (2/2)

Examination time and form

Decentral - Group examination paper (all given the same grades) (25%)

Remark

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Examination-aid rule

Term papers

- Term papers must be written without anyone else's help and in accordance with the known quotation standards, and they must contain a declaration of authorship.
- The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the APA or MLA standards. The indications of the sources of information taken over verbatim or in paraphrase (quotations) must be integrated into the text in accordance with the precepts of the applicable quotation standard, while informative and bibliographical notes must be added as footnotes (recommendations and standards can be found, for example, in METZGER, C. (2015), Lern- und Arbeitsstrategien (11th ed., 4th printing). Aarau: Sauerländer).
- For any work written at the HSG, the indication of the page numbers both according to the MLA and the APA standard is never optional.
- Where there are no page numbers in sources, precise references must be provided in a different way: titles of chapters or sections, section numbers, acts, scenes, verses, etc.
- For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOREK R. et SCHINDLER B. (2014, Juristisches Arbeiten: Eine Anleitung für Studierende (5. Auflage), Zürich: Schulthess, or the recommendations of the Law School).

Supplementary aids

No additional aids.

Examination languages

Question language: English

Answer language: English

Examination content

Introduction

Need for Risk Management

Risk Factors

Risk Measures: From Value-at-Risk to Convex Risk Measures

Credit Risk

Structural Credit Models: Merton Model and Extensions

Reduced Form Credit Model



An Application: Retail Credit Risk Modeling

Operational Risk

Introduction

Extreme Value Theory (ETV)

Application of EVT to Operational Risk Valuation

Examination relevant literature

De Giorgi, Enrico (2017): Quantitative Risk Management, Lecture Notes, HSG.

Please note

We would like to point out to you that this fact sheet has absolute priority over other information such as StudyNet, faculty members' personal databases, information provided in lectures, etc.

When will the fact sheets become binding?

- Information about courses and examination time (central/decentral and grading form): from the start of the bidding process on 24 August 2017
- Information about decentral examinations (examination-aid rule, examination content, examination relevant literature): after the 4th semester week on 16 October 2017
- Information about central examinations (examination-aid rule, examination content, examination relevant literature): from the start of the enrolment period for the examinations on 06 November 2017

Please look at the fact sheet once more after these deadlines have expired.